Naval Air Station Brunswick **Cumberland County** **Brunswick, Maine** **A-268-71-Y-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #4**

After review of the air emissions license amendment application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

1. Naval Air Station Brunswick (NASB) of Bruswick, Maine was issued Air Emission License A-268-71-T-A/R on April 21, 2000 permitting the operation of emission sources associated with their military flight operations facility. The license was subsequently amended on November 6, 2000 (A-268-71-V-A), September 25, 2001 (A-268-71-W-M), and December 20, 2002 (A-268-71-X-M).

2. NASB has requested an amendment to their license in order to license new emission units to be installed as part of the construction of Hangar 6.

B. Emission Equipment
NASB is licensed to operate the following new equipment:

Fuel Burning Equipment

Equipment	**Maximum Capacity (MMBtu/hr)**	**Maximum Firing Rate (scf/hr)**	**Fuel Type, % sulfur**
Hangar 6, Boiler #1	3.01	2,918	Natural Gas, negligible
Hangar 6, Boiler #2	3.01	2,918	Natural Gas, negligible
Hangar 6, Boiler #3	3.01	2,918	Natural Gas, negligible
Hangar 6, Make-up Air Unit #1	4.76	4,617	Natural Gas, negligible
Hangar 6, Make-up Air Unit #2	4.76	4,617	Natural Gas, negligible
Hangar 6, Make-up Air Unit #3	4.76	4,617	Natural Gas, negligible
Hangar 6, Make-up Air Unit #4	4.76	4,617	Natural Gas, negligible

Electrical Generation Equipment

Equipment	Location	Power Output (kW)	Firing Rate	Fuel Type, % sulfur
Hangar 6 Engine #53	Hangar 6	230	2,574 scf/hr	Natural Gas, negligible
Engine #54*	Hangar 5	250	28.0 gph	Diesel, 0.05%
Engine #55	Main Gate	75	5.8 gph	Diesel, 0.05%
Engine #56	Dyer's Gate	150	11.5 gph	Diesel, 0.05%

*Engine #54 will replace previously licensed Engine #3.

Once this project is complete, NASB will remove all boilers currently permitted in Hangars 1 and 3.

C. Application Classification

The modification of a minor source is considered a major modification based on whether or not expected emission increases exceed the "Significant Emission Levels" as given in Maine's Air Regulations. The emission increases are determined by subtracting the current licensed emissions preceding the modification from the maximum future licensed allowed emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Sig. Level
PM	20.0	21.4	+1.4	100
PM_{10}	20.0	21.4	+1.4	100
SO_2	94.0	88.2	(5.8)	100
NO_x	73.0	71.9	(1.1)	100
CO	15.0	18.8	+3.8	100
VOC	48.0	48.0	0.0	50

This modification is determined to be a minor modification and has been processed as such.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in Chapter 100 of the Department regulations. Separate control

requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in Chapter 100 of the Air Regulations. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Hangar 6 Boilers / Make-up Air Units

NASB has proposed adding three (3) new boilers (3.01 MMBtu/hr each) as well as four (4) new make-up air units (4.76 MMBtu/hr each). All of these units fire natural gas. NASB has not proposed any change to the facility's current fuel limit.

The boilers and make-up air units to be installed in Hangar 6 all have maximum heat inputs less than 10 MMBtu/hr and are therefore not subject to the New Source Performance Standards (NSPS) Subpart Dc for steam generating units greater than 10 MMBtu/hr manufactured after June 9, 1989.

A summary of the BACT analysis for the Hangar 6 boilers and air make-up units is the following:

1. The facility shall not exceed a combined fuel usage of #2 fuel oil and natural gas equivalent to 350,000 MMBtu/year, based on a 12 month rolling total.
2. The maximum sulfur content of the #2 fuel oil shall not exceed 0.50% by weight.
3. Chapter 106 regulates fuel sulfur content, however in this case a BACT analysis for SO_2 determined a more stringent limit of 0.50% was appropriate and shall be used.
4. Chapter 103 regulates PM emission limits, however in this case a BACT analysis for PM determined a more stringent limit of 0.05 lb/MMBtu was appropriate and shall be used. The PM_{10} limits are derived from the PM limits.
5. NO_x emission limits are based on data from similar boilers of this size and age.
6. CO and VOC emission limits are based upon AP-42 data dated 9/98.
7. Visible emissions from the boilers/make-up air units shall not exceed 20% opacity on a 6-minute block average.

C. Hangar 6 Engine #53
NASB proposes to install a new 2.65 MMBtu/hr (230 kW output) natural gas fired emergency generator.

"Emergency" is defined in Chapter 100 and throughout this document as: "… any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology based emission limitation under the license, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error."

A summary of the BACT analysis for the Hangar 6 Engine #53 is the following:

1. The Hangar 6 Generator shall be limited to 500 hr/yr of operation based on a 12 month rolling total. Compliance shall be demonstrated by a written monthly log of operating hours.
2. The PM and PM_{10} limits are derived from Chapter 103.
3. SO_2, NO_x, CO, and VOC emission limits are based upon AP-42 data dated 7/00.
4. Visible emissions from the Hangar 6 Engine #53 shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period.

D. Engines #54, #55, #56
NASB proposes to replace the currently permitted Engine #3 in Hangar 5 with a new Engine #54. Additionally, NASB proposes to install two new emergency generators (Engines #55 and #56) at the Main Gate and Dyer's Gate, respectively.

A summary of the BACT analysis for Engine #54 (250 kW), Engine #55 (75 kW), and Engine #56 (150 kW) is the following:

1. The total fuel use for the facility's diesel generators shall not exceed 30,000 gal/year of diesel fuel, based on a 12 month rolling total, with a maximum sulfur content not to exceed 0.05% by weight.
2. Chapter 106 regulates fuel sulfur content, however in this case a BACT analysis for SO_2 determined a more stringent limit of 0.05% was appropriate and shall be used.
3. The PM and PM_{10} limits are derived from Chapter 103.
4. NO_x, CO, and VOC emission limits are based upon AP-42 data dated 10/96.

5. Visible emissions from the facility's generators shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period.

E. Process Operations

Other emission sources will be included in Hangar 6 including two paint booths, three fuel tank exhaust fans, and additional insignificant fuel burning equipment used for heating/air handling needs.

Painting operations are already addressed in NASB's current license. The fuel tank exhaust fans are used to evacuate aircraft fuel tanks before maintenance work can be performed. Due to the type and quantity of emissions, this activity has been determined to be an insignificant activity per Chapter 115, Appendix B, Section B.1.

F. Hangar 1 and 3

Once the construction on Hangar 6 is complete, the boilers currently in Hangars 1 and 3 shall be removed.

G. Annual Emission Restrictions

NASB shall be restricted to the following annual emissions, based on a 12 month rolling total:

Total Allowable Annual Emission for the Facility
(used to calculate the annual license fee)

	PM	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Boilers	21.0	21.0	88.1	61.3	14.3	0.9
Diesel Generators	0.3	0.3	0.1	9.1	2.0	0.7
Hangar 6 Engine #53	0.1	0.1	--	1.5	2.5	0.2
Process/Fugitive	--	--	--	--	--	46.8
Total TPY	**21.4**	**21.4**	**88.2**	**71.9**	**18.8**	**48.0**

Note: Annual emissions of CO and VOC are based on emissions from firing natural gas. Emissions for all other pollutants are based on oil firing.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-268-71-Y-A subject to the conditions found in Air Emission License A-268-71-T-A/R, in amendments A-268-71-V-A, A-268-71-W-M, A-268-71-X-M, and in the following conditions:

All previously issued Conditions pertaining to Hangar 1 Boilers #1, #2, & #3 and Hangar 3 Boilers #1, #2, & #3 shall remain in effect until construction on Hangar 6 is completed. At that time, the units mentioned above are to be taken out of service.

The following shall replace Condition (16) of Air Emission license A-268-71-T-A/R:

(16) Boilers

A. NASB shall not exceed a combined fuel usage to the boilers/air make-up units of #2 fuel oil and natural gas equivalent to 350,000 MMBtu/year heat input, based on a 12 month rolling total. Compliance shall be based on records of fuel use and a heating value of 0.140 MMBtu/gallon for #2 fuel oil and 0.00103 MMBtu/scf for natural gas.

B. Sulfur content of the #2 fuel oil fired in the boilers shall not exceed 0.50% by weight. Compliance shall be based on fuel receipts from the supplier showing the quantity of fuel delivered and the percent sulfur of the fuel.

C. Emissions shall not exceed the following:

Equipment		**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Hangar 6							
Boiler #1	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.15	0.15	-	0.29	0.25	0.02
Boiler #2	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.15	0.15	-	0.29	0.25	0.02
Boiler #3	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.15	0.15	-	0.29	0.25	0.02
Make-up #1	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.24	0.24	-	0.46	0.39	0.03

Equipment		PM	PM_{10}	SO_2	NO_x	CO	VOC
Make-up #2	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.24	0.24	-	0.46	0.39	0.03
Make-up #3	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.24	0.24	-	0.46	0.39	0.03
Make-up #4	lb/MMBtu	0.05	-	-	-	-	-
	lb/hr	0.24	0.24	-	0.46	0.39	0.03
Bldg. 86							
Boiler #1*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.36	0.36	1.51	1.05	0.24	0.01
Boiler #2*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.36	0.36	1.51	1.05	0.24	0.01
Boiler #3*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.36	0.36	1.51	1.05	0.24	0.01
Bldg. 250							
Boiler #1*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.72	0.72	3.02	2.10	0.49	0.03
Boiler #2*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.72	0.72	3.02	2.10	0.49	0.03
Boiler #3*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.72	0.72	3.02	2.10	0.49	0.03
Make-up air	lb/hr	0.33	0.33	1.38	0.96	0.22	0.01
Bldg. 211							
Boiler #3*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.66	0.66	2.77	1.93	0.45	0.03
Boiler #4*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.74	0.74	2.77	1.93	0.45	0.03
Boiler #5*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.74	0.74	2.77	1.93	0.45	0.03
Bldg. 594							
Boiler #1*	lb/hr	0.18	0.18	0.76	0.53	0.12	0.01
Boiler #2*	lb/hr	0.18	0.18	0.76	0.53	0.12	0.01
Bldg. 516*	lb/hr	0.19	0.19	0.81	0.56	0.13	0.01
Bldg. 54*	lb/hr	0.26	0.26	0.11	0.77	0.18	0.01
Bldg. 645*	lb/hr	0.20	0.20	0.86	0.60	0.14	0.01

Equipment		PM	PM_{10}	SO_2	NO_x	CO*	VOC*
Hangar 5							
Boiler #1*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.51	0.51	2.14	1.49	0.35	0.02
Boiler #2*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.51	0.51	2.14	1.49	0.35	0.02
Boiler #3*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.51	0.51	2.14	1.49	0.35	0.02
Boiler #4*	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.51	0.51	2.14	1.49	0.35	0.02
Bldg. 512							
Boiler #1*	lb/hr	0.16	0.16	0.65	0.46	0.11	0.01
Boiler #2*	lb/hr	0.14	0.14	0.63	0.44	0.10	0.01
Boiler #3*	lb/hr	0.14	0.14	0.63	0.44	0.10	0.01

* Emission rates for CO and VOC are based on NG firing. All other emission rates are based on oil firing.

D. Visible emissions from each of the boilers/make-up air units shall not exceed 20% opacity on a 6-minute block average.

All previously issued Conditions pertaining to Engine #3 located in Hangar 5 shall remain in effect until installation of Engine #54 is completed. At that time, Engine #3 is to be taken out of service.

The following shall replace Condition (28) of Air Emission License A-268-71-X-M:

(28) **Generators**

A. Total fuel use for the Generators shall not exceed 30,000 gal/yr of diesel fuel with a maximum sulfur content not to exceed 0.05% by weight. Compliance shall be based on fuel receipts from the supplier showing the quantity of fuel delivered and the percent sulfur of the fuel. Records of annual fuel use shall be kept on a 12-month rolling total basis.

B. Emissions shall not exceed the following:

Equipment		**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Engine #3	lb/hr	0.18	0.18	0.08	6.66	1.43	0.53
Engine #4	lb/hr	0.27	0.27	0.11	9.88	2.13	0.78
Engine #9	lb/hr	0.08	0.08	0.03	2.78	0.60	0.22
Engine #18-1	lb/hr	0.34	0.34	0.14	12.35	2.66	0.98
Engine #18-2	lb/hr	0.34	0.34	0.14	12.35	2.66	0.98
Engine #18-3	lb/hr	0.34	0.34	0.14	12.35	2.66	0.98
Engine #18-4	lb/hr	0.34	0.34	0.14	12.35	2.66	0.98
Engine #26	lb/hr	0.35	0.35	0.15	12.92	2.78	1.03
Engine #27	lb/hr	0.27	0.27	0.11	9.88	2.13	0.78
Engine #29	lb/hr	0.32	0.32	0.13	11.82	2.55	0.94
Engine #30	lb/hr	0.12	0.12	0.05	4.32	0.93	0.34
Engine #31	lb/hr	0.09	0.09	0.04	3.44	0.74	0.27
Engine #32	lb/hr	0.15	0.15	0.06	5.38	1.16	0.43
Engine #42	lb/hr	0.15	0.15	0.06	5.38	1.16	0.43
Engine #44	lb/hr	0.07	0.07	0.03	2.60	0.56	0.21
Engine #46	lb/hr	0.09	0.09	0.04	3.44	0.74	0.27
Engine #47	lb/MMBtu	0.20	-	-	-	-	-
	lb/hr	1.76	1.76	0.44	28.10	7.46	0.79
Engine #48	lb/hr	0.15	0.15	0.06	5.38	1.16	0.43
Engine #49	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.47	0.47	0.20	17.20	3.71	1.37
Engine #50	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.37	0.37	0.16	13.76	2.96	1.09
Engine #51	lb/hr	0.27	0.27	0.11	9.79	2.11	0.78
Engine #52	lb/hr	0.23	0.23	0.10	8.60	1.85	0.68
Engine #54	lb/MMBtu	0.12	-	-	-	-	-
	lb/hr	0.46	0.46	0.20	16.93	3.65	1.34
Engine #55	lb/hr	0.10	0.10	0.04	3.53	0.76	0.28
Engine #56	lb/hr	0.19	0.19	0.08	7.01	1.51	0.56

C. Visible emissions from each of the facility's generators shall not exceed 20% opacity on a six (6) minute block average, except for no more than two (2) six (6) minute block averages in a continuous 3-hour period.

The following are new Conditions

(33) **Hangar 6 Engine #53**

A. NASB shall limit Hangar 6 Engine #53 to 500 hr/yr of operation (based on a 12 month rolling total). An hour meter shall be maintained and operated on the generator.

B. A written log documenting the hours of operation for the Hangar 6 Engine #53 shall be kept on a monthly basis.

C. The Hangar 6 Engine #53 shall fire only natural gas.

D. Emissions shall not exceed the following:

Equipment		**PM**	**PM_{10}**	**NO_x**	**CO**	**VOC**
Hangar 6 Engine #53	lb/hr	0.13	0.13	5.86	9.86	0.93

E. Visible emissions from the Hangar 6 Engine #53 shall not exceed 20% opacity on a 6-minute block average, except for no more than 2 six-minute block averages in a continuous 3-hour period.

(34) This amendment shall expire concurrently with Air Emission License A-268-71-T-A/R.

DONE AND DATED IN AUGUSTA, MAINE THIS DAY OF 2003.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
DAWN R. GALLAGHER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 6/10/03
Date of application acceptance: 6/25/03

Date filed with the Board of Environmental Protection: _____

This Order prepared by Lynn Ross, Bureau of Air Quality.